

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 October 2004 (21.10.2004)

PCT

(10) International Publication Number
WO 2004/090308 A1

(51) International Patent Classification⁷: **F02D 11/10**,
11/00, 9/02

(21) International Application Number:
PCT/JP2004/001100

(22) International Filing Date: 8 April 2004 (08.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003-105171 9 April 2003 (09.04.2003) JP

(71) Applicant (for all designated States except US): TOY-
OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toy-
ota-cho, Toyota-shi, Aichi-ken 471-8571 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TAKEUCHI,

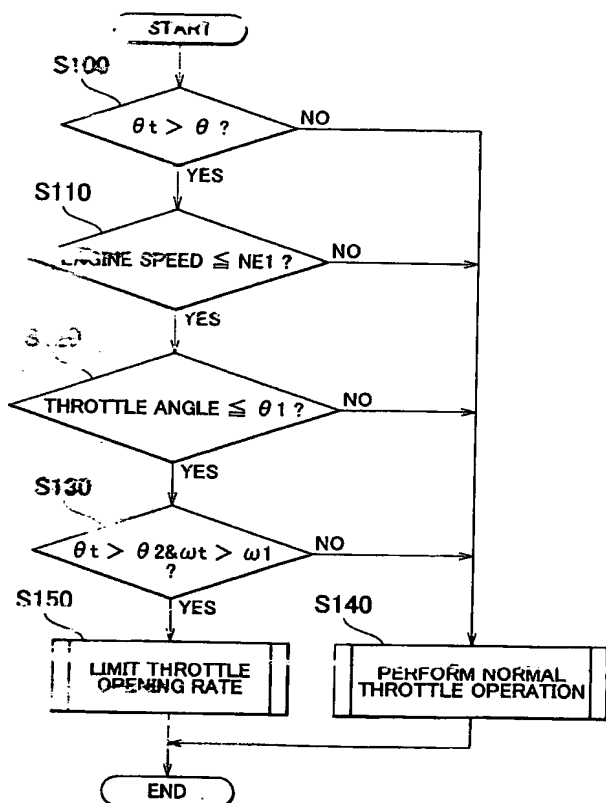
Nobutaka [JP/JP]; c/o Toyota Jidosha Kabushiki Kaisha,
1, Toyota-cho, Toyota-shi, Aichi-ken 471-8571 (JP). NA-
GAI, Shinji [JP/JP]; c/o Toyota Jidosha Kabushiki Kaisha,
1, Toyota-cho, Toyota-shi, Aichi-ken 471-8571 (JP).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

[Continued on next page]

(54) Title: THROTTLE CONTROL IN INTERNAL COMBUSTION ENGINE FOR NOISE REDUCTION



(57) Abstract: Limitation of the opening rate of the throttle valve is prohibited unless the following conditions have been all satisfied: (i) the engine speed detected at starting opening the throttle valve is below a prescribed speed; (ii) the throttle angle detected at starting opening the throttle valve is below a prescribed throttle angle; (iii) the target throttle-open angle is above a prescribed throttle-open angle; and (ix) the target opening rate of the throttle valve is above a prescribed opening rate.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*